AMENDMENTS TO THE CLAIMS:

1. (Currently amended) A method of executing a linear algebra subroutine, said method comprising:

for an execution code controlling an operation of a floating point unit (FPU) performing a linear algebra subroutine execution, ~~unrolling~~ inserting instructions to ~~prefetch~~ timely move data into a cache providing data ~~into~~ for said FPU, ~~said unrolling causing said instructions to touch data anticipated~~ thereby improving an efficiency for said linear algebra subroutine execution.

2. (Currently amended) The method of claim 1, wherein said ~~prefetching~~ timely moving data is accomplished by ~~utilizing~~ scheduling move type instructions into time slots ~~caused by a difference between a time to execute instructions in said subroutine execution process and a time to load said data~~ existing in a Level 3 Dense Linear Algebra Subroutine.

3. (Currently amended) The method of claim 1, wherein said ~~matrix~~ linear algebra subroutine comprises a matrix multiplication operation.

4. (Currently amended) The method of claim 1, wherein said ~~matrix~~ linear algebra subroutine comprises a more efficient equivalent of a subroutine from ~~a~~ LAPACK (Linear Algebra PACKage).

5. (Currently amended) The method of ~~claim 4~~ claim 1, wherein said ~~LAPACK~~ linear algebra subroutine ~~comprises~~ invokes a BLAS Level 3 L1 cache kernel.

6. (Currently amended) An apparatus, comprising:

a memory to store matrix data to be used for processing in a linear algebra program;

a floating point unit (FPU) to perform said processing;

a load/store unit (LSU) to load data to be processed by said FPU, said LSU loading said data into a plurality of floating point registers (FRegs); and

a cache to store data from said memory and provide said data to said FRegs,

wherein said matrix data in said memory is ~~touched~~ timely moved by inserting moving instructions to be loaded into said cache prior to a need for said data to be in said FRegs for said processing.

7. (Original) The apparatus of claim 6, wherein said linear algebra program comprises a matrix multiplication operation.

8. (Currently amended) The apparatus of claim 6, wherein said linear algebra program comprises a more efficient equivalent of a subroutine from ~~a~~ LAPACK (Linear Algebra PACKage).

9. (Currently amended) The apparatus of claim ~~8~~ 6, wherein said ~~LAPACK subroutine~~ processing comprises invoking a BLAS Level 3 L1 cache kernel.

10. (Currently amended) The apparatus of claim 6, further comprising:

a compiler as modified to incorporate linear algebra theory and techniques to automatically generate instructions for said ~~touching~~ inserting said moving instructions.

11. (Currently amended) The apparatus of claim 10, wherein said moving instructions ~~cause a prefetching of said data by utilizing~~ are inserted into time slots ~~caused by a difference between a time to execute instructions in said subroutine execution process and a time to load said data~~ existing in a Level 3 Dense Linear Algebra Subroutine.

12. (Currently amended) A ~~signal-bearing~~ computer-readable storage medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform a method of executing linear algebra subroutines, said method comprising:

for an execution code controlling an operation of a floating point unit (FPU) performing a linear algebra subroutine execution, ~~unrolling~~ inserting instructions to ~~prefetch~~ timely move data into a cache providing data into said FPU, ~~said unrolling causing said instructions to touch data anticipated~~ thereby improving an efficiency for said linear algebra subroutine execution.

13. (Currently amended) The ~~signal-bearing~~ computer-readable storage medium of claim 12, wherein said ~~prefetching data~~ timely moving data is accomplished by ~~utilizing~~ inserting move type instructions into time slots ~~caused by a difference between a time to execute instructions in said subroutine execution process and a time to load said data~~ existing in a Level 3 Dense Linear Algebra Subroutine.

14. (Currently amended) The ~~signal-bearing~~ computer-readable storage medium of claim 12, wherein said ~~matrix~~ linear algebra subroutine comprises a matrix multiplication operation.

15. (Currently amended) The ~~signal-bearing~~ computer-readable storage medium of claim 12, wherein said ~~matrix~~ linear algebra subroutine comprises a more efficient equivalent of a subroutine from ~~a~~ LAPACK (Linear Algebra PACKage).

16. (Currently amended) The ~~signal-bearing~~ computer-readable storage medium of claim 12, wherein said ~~LAPACK~~ linear algebra subroutine ~~comprises~~ invokes a BLAS Level 3 L1 cache kernel.

17. (Currently amended) A method of providing a service involving at least one of solving and applying a scientific/engineering problem, said method comprising at least one of:

using a linear algebra software package that computes one or more matrix subroutines, wherein said linear algebra software package generates an execution code controlling an operation of a floating point unit (FPU) performing a linear algebra subroutine execution, ~~unrolling~~ such that instructions are inserted to ~~prefetch~~ timely move data into a cache providing data ~~into~~ for said FPU, ~~said unrolling causing said instructions to touch data anticipated~~ thereby improving an efficiency for said linear algebra subroutine execution;

providing a consultation for solving a scientific/engineering problem using said linear algebra software package;

transmitting a result of said linear algebra software package on at least one of a network, a signal-bearing medium containing machine-readable data representing said result, and a printed version representing said result; and

receiving a result of said linear algebra software package on at least one of a network, a signal-bearing medium containing machine-readable data representing said result, and a printed version representing said result.

18. (Currently amended) The method of claim 17, wherein said ~~matrix~~ linear algebra subroutine comprises a more efficient equivalent of a subroutine from ~~a~~ LAPACK (Linear Algebra PACKage).

19. (Currently amended) The method of claim ~~18~~ 17, wherein said ~~LAPACK~~ linear algebra subroutine ~~comprises~~ invokes a BLAS Level 3 L1 cache kernel.

20. (New) The method of claim 1, further comprising:

modifying a compiler to incorporate linear algebra theory and techniques to automatically generate instructions for said inserting said instructions.